tion, the abstract has been shortened to the more-modern standard, as required.

Section 103 rejections

In the Official Action it is said that all the claims now in this case are obvious over a combination of Minich and Knize.

As to claim 1, first, Applicant respectfully reserves the right to swear back of Minich '076. (In this regard, Applicant respectfully inquires whether this patent is deemed the best — in particular, the earliest — reference for the purpose for which it is cited. Applicant's specification [page 43, line 3, through page 45, line 4] points out that teachings in Minich's earlier '263 patent are "conceptual, rather than practical", and questionable as to enablement.)

Minich fails to scan his projection beam across the face of his light valve; rather he only floods the entire face simultaneously — or at least substantially so. New claim 82 distinguishes Minich on this basis.

New claim 86 (as well as original claim 15), furthermore, claims Applicant's specifically illustrated system of gas lasers exclusively, and this distinguishes Knize. New claim 85 distinguishes both Minich (by reciting scanning) and Knize (by reciting gas lasers).

As to claim 2, it is satisfied by neither Minich nor Knize — and hence not by the combination either. Knize teaches use of

a red beam with light in the range of 610 through 640 nm; whereas claim 2 recites that all red light used is at 635 or higher.

As to claim 3, this claim has now been revised to bring the 635-to-650-nm recitation into combination with the scanning recitation of new claim 82.

As to claim 4, with apologies, a more extended discussion is required. Although Applicant concurs with the Examiner's point that "about" 647 nm might conceivably encompass 635 nm, the claim has now been amended to recite "substantially 647". This limitation is meaningful because:

- In this spectral region, intensity is falling off very rapidly with increasing wavelength, so that each nanometer advance represents a major drop in available visible light.
- Because of this, the conventional wisdom was to stay away from the longer wavelengths as much as possible. The Applicant's "Related Art" section 2f (page 27, line 1, through page 28 line 3) gives two representative examples of this mind-set among those skilled in this field;
- Furthermore historical limitations in the video art have even more strongly pushed laser-projector people down and well away from the long-wavelength limit — see discussion of this additional mind-set picking up in Applicant's specification at page 28, line 4, through 11;
- There is still more historical impetus away from the invention: because earlier systems traditionally discarded cyan, workers in the field automatically supposed that a good mixable red above 635 nm was unavailable or impractical. Rather than restoring the "profligately wasted" cyan (with its

very desirable high luminosity, as described at center of Applicant's page 28), artisans instead avoided red above 635 and 640 nm — arguing illogically that it lacked luminosity.

- As noted above (regarding claim 2), not even Knize proposes use of wavelengths beyond 640 nm.

In view of all these considerations, objectively the phrase "substantially 647" should be taken as equivalent to "significantly above 640" — *i. e.*, at least 642 to 645, though preferably 647. The phrase "substantially 647 nm" therefore distinguishes Knize.

As to claim 5, amendment has been provided to bring the moving-picture limitation into combination with the above-recited recitation of "substantially 647 nm".

As to claim 6 (and 14), it is said in the Official Action — and the Applicant concurs — that "the mixture of the light can inherently be used to form colors such as black, white, and cyan". These claims, however, recite (emphasis added) "substantially pure neutral colors including pure white and pure black".

It is well known that neutral colors and skin tones are among the most difficult challenges to any color-reproduction system. As noted in Applicant's specification (page 87, line 12, through page 88 line 4), the mixture of light well above 635 nm enhances achievement of more accurately pure neutral colors — or, in other words, colors that are more accurately neutral.

The Applicant is able to accomplish this very well, through use of the longer-wavelength laser light under discussion. The proposed combination of Minich and Knize cannot — for Knize prescribes use of laser light from 610 through 640 nm. His shorter-wavelength constituents at 610 through 635 nm degrade the capa-

bility to produce "substantially pure" neutral colors, or substantially neutral colors.

Production of quite accurately neutral shades is an important achievement in the art, and forms part of the basis for several further claims of color-related characteristics. All of claims 7 through 15 depend from claim 6.

As to claims 7 and 10, in the Official Action it is said (as noted above) that light mixtures "can inherently be used to form . . . cyan". Applicant's claim, however, does not refer to such forming of cyan by color mixing — *i. e.* by combination of primary colors red green and blue.

To the contrary, as explained in the specification (page 28, line 12, through page 29 line 10), the cyan light recited in claim 7 is original laser light, or what can be called "native" laser light. Although believed to make the point adequately in the original wording, claim 7 has been amended to make this even more emphatically clear.

As to claims 11 and 12, it is said in the Official Action that it "would have been obvious to control the light valve by any of known computer signaling means such as traditional or otherwise". The Action argues that "it is an obvious use to utilize different signal depending upon desired usage. Official notice is made of this aspect."

Applicant's specification, however, shows (*e. g.*, page 28 at lines 4 through 11) that traditional broadcast-video signal formats were in part to blame for the teaching away from use of red laser-light constituents beyond 640 nm. Choice of color phosphors for video, choice of color laser lines, and generally much of industrial color science call for selecting specific colorants

that go together — complementing each other to enable good color balance.

Color balance means forming pure neutral colors, or in other words nonchromatic grays — and a companion, more-subtle challenge, forming realistic-looking skin tones. This is the subject matter of claim 6, from which claims 11 and 12 depend.

Hence it is significant that the invention of claim 6 works most easily, and possibly works best, with nontraditional video signals. The above-quoted passages from the Official Action are true — but only as broad technological philosophy, and not accurate at the practical level of making real devices really work.

Thus the most highly preferred practice of the present invention, as the application says (bottom of page 52) "eschews . . . broadcast video inputs". Recitations of claims 11 and 12 thus go to best-mode practice of the claim 6 invention.

The invention does work — and works quite well, as noted in the paragraph bridging pages 52 and 53 of the specification — with conventional signals. Operation as in claims 11 and 12, however, is preferable.

As to claim 16, in the Official Action nothing is said of the Applicant's specific 8:6:5 ratio of red, green and blue light respectively. As set forth in the present application (page 53, lines 12 through 19), Applicant has discovered that this ratio is particularly favorable — and, again, it runs "contrary to dire earlier teachings".

As to claim 66, it is said in the Official Action: "Any projector may be made to project onto any surface simply by pointing the projector in that direction." This simple fact is surely true; furthermore unfocused and blurry images doubtless

are projected onto surfaces frequently — though not intentionally as a professional show for an audience.

The thrust of this claim, however, is of course that when Applicant's system projects images onto irregular surfaces, or surfaces at highly varying distances from the projector, this is done quite deliberately, and as a show, and for an audience. The reason is that Applicant's invention enables formation of images — at each of the highly divergent distances — that are sharp, not blurry.

Although the original wording is believed to have made this point, the Applicant has now added language to claim 66 — and also added a new claim 91 — which articulate these novel characteristics of both the projection activity and its technological results.

Additional new claims

Applicant's most-specifically described embodiments have three parallel color channels, each feeding into a separate respective liquid-crystal light valve (LCLV) modulator. Also mentioned and described at considerable length are systems in which all color channels pass in common through a single modulator. These include the Hughes arc-lamp projector, which Applicant mentions having adapted to make a prototype of the present invention — and also the two Minich patents.

Applicant has now incorporated Minich '076 by reference into the specification, and added two paragraphs noting the evident applicability of the present invention to such common-single-modulator arrangements. The Applicant respectfully submits that no new matter is added by these passages, and has directed several

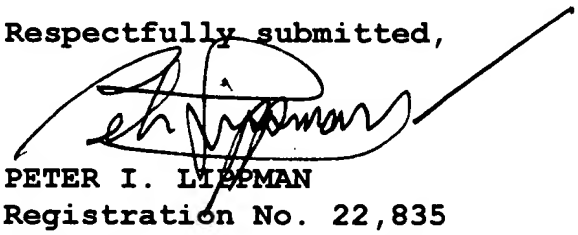
new claims to the common-modulator subject matter — as well as other claims reciting separate modulators for each channel.

Conclusion

In view of the foregoing amendments and remarks, Applicant respectfully requests the Examiner's favorable reconsideration and allowance of all the claims now standing in this case.

It is respectfully requested that, should there appear any further obstacle to allowance of the claims herein, the Examiner telephone the undersigned attorney to try to resolve the obstacle.

Respectfully submitted,



PETER I. LIPPMAN
Registration No. 22,835
Attorney for the Applicant

Ashen & Lippman
4385 Ocean View Boulevard
Montrose, California 91020

TELEPHONE:
818/249-5961

July 19, 2002